AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph [00006] with the following paragraph.

[0006] The current art describes single wave processes that concentrate on the cryogenic target temperature and possibly one positive range temperature. The focus of the current art on the cryogenic target temperature does not give any regard to the material being treated. The cryogenic phase causes ~~stresss~~ stresses in the metal and the subsequent heat process also ~~causes~~ stresses the material. The prior art has done little to deal with these secondary stresses.

Please replace paragraph [00017] with the following paragraph.

[00017] The thermal process is a method for treating a metal to improve the structural and metallurgical characteristics of the metal. In a preferred embodiment the term material can be defined as a metal.

Please replace paragraph [00018] with the following paragraph.

[00018] FIG 1 provides the steps of the process. The method begins by placing a metal (10) within a thermal control apparatus (12). The metal (10) itself has a metal temperature ~~(11)~~ . The thermal control apparatus (12) has a chamber (14) that has a chamber temperature ~~(15)~~.

Please replace paragraph [00019] with the following paragraph.

[00019] FIG 2 shows a cross sectional detail of the thermal control apparatus (12) that comprises a chamber (14). In the embodiment of FIG 2, cryogenic material ~~(16)~~ (18) is introduced to the thermal control apparatus, such as through a valve ~~(18)~~ such that the temperature of the chamber (12) increases or ~~deeeases~~ decreases depending on whether the valve is on or off. The temperature of the chamber is closely regulated.

Please replace paragraph [00020] with the following paragraph.

[00020] Cryogenic material ~~(16)~~ (18) is introduced into the thermal control apparatus (12) in

order to decrease the metal temperature. The cryogenic material is added so that the metal is not over-stressed. Over-stressing includes fracturing the metal. The temperature of the metal is decreased to a first target temperature ~~(18)~~ ranging from -40 degrees F and -380 degrees F at a first temperature rate ~~(20)~~ ranging from 0.25 degrees per minute and 20 degrees per minute. Once the first target temperature ~~(18)~~ is reached, the cryogenic material (18) is no longer added to the chamber (14).

Please replace paragraph [00021] with the following paragraph.

[00021] The thermal control apparatus can further include a heat exchanger (16) located within the chamber to provide a cryogenic vapor (20) to the tank. The cryogenic material (18) is released into the heat exchanger (16) thereby absorbing heat from the chamber into the heat exchanger (16) forming a cryogenic vapor (20) that fills the tank. Examples of cryogenic vapors contemplated in this invention are hydrogen, nitrogen, oxygen, helium, argon, and combinations thereof.

Please replace paragraph [00022] with the following paragraph.

[00022] The method continues by increasing the chamber temperature ~~(15)~~ to a second target temperature ~~(22)~~ ranging from 0 F and 1400 F. The metal temperature ~~(11)~~ is also increased to the second target temperature ~~(22)~~ at a second temperature rate ~~(26)~~. The second temperature rate ~~(26)~~ ranges from 0.25 degrees per minute and 20 degrees per minute. The result of this first cycle is a treated metal without fractures ~~(28)~~.

Please replace paragraph [00023] with the following paragraph.

[00023] In the preferred embodiment, the first temperature rate ~~(20)~~ is different from the second temperature rate ~~(26)~~ to create a desired metallurgical feature in the treated metal without fractures. Examples of the desired metallurgical features improved using this method include malleability, flexibility, ductility, hardness, elasticity, strength, and combinations thereof. The first temperature rate, however, can be

substantially the same as the second temperature rate and create a similar effect on the metal.

Please replace paragraph [00024] with the following paragraph.

[00024] The invention also contemplates that a second thermal cycle can be applied to the metal. The cryogenic material ~~(16)~~ is introduced, again, into the thermal control apparatus (12) to decrease the metal temperature ~~(11)~~ and prevent over-stressing of the metal. The metal temperature is decreased to a third target temperature ~~(30)~~ at a third temperature rate ~~(32)~~. In the preferred embodiment, the third target temperature is colder than the first target temperature.

Please replace paragraph [00025] with the following paragraph.

[00025] The second cycle continues by stopping the introduction of the cryogenic material ~~(16)~~ (18) into the chamber (14) once the third target temperature ~~(30)~~ is reached. The chamber temperature ~~(15)~~ is then increased to a fourth target temperature ~~(34)~~. The metal temperature ~~(11)~~ is likewise increased to the fourth target temperature ~~(34)~~ at a fourth temperature rate ~~(36)~~. The second cycle results in a treated metal without fractures ~~(28)~~ with improved structural and metallurgical characteristics.

Please replace paragraph [00026] with the following paragraph.

[00026] In the preferred embodiment, the thermal process comprises three cycles. In the third cycle, the cryogenic material ~~(16)~~ (18) is added to the thermal control apparatus (12) to decrease the metal temperature ~~(11)~~ while preventing over-stressing of the metal. The metal temperature is reduced to a fifth target temperature ~~(38)~~ at a fifth temperature rate ~~(40)~~. When the fifth target temperature ~~(38)~~ is reached, the cryogenic material ~~(16)~~ (18) is no longer introduced into the chamber (14).

Please replace paragraph [00027] with the following paragraph.

[00027] The third cycle continues by increasing the chamber temperature ~~(15)~~ to a sixth target temperature ~~(42)~~ and, thereby, increasing the metal temperature ~~(11)~~ to the

sixth target temperature ~~(42)~~. The temperature increase is done at a sixth temperature rate ~~(44)~~ resulting in a treated metal without fractures ~~(28)~~ and improved structural and metallurgical characteristics.

Please replace paragraph [00028] with the following paragraph.

[00028] FIG 3 depicts the process of the invention wherein the thermal process includes three thermal cycles resulting in a treated metal without fractures ~~(28)~~ and improved structural and metallurgical characteristics.

Please replace paragraph [00032] with the following paragraph.

[00032] In a preferred embodiment the term material can be defined as a metal. The types of metal contemplated to be used by this process include bronze, cobalt, silver, silver alloy, nickel, nickel alloy, chromium, chromium alloy, vanadium, vanadium alloy, tungsten, tungsten alloy, titanium, titanium alloy, scandium, scandium alloy, tin, platinum, palladium, gold, gold alloy, plated metal, lead, plutonium, uranium, zinc, iron, iron alloy, magnesium, magnesium alloy, gallium, gallium arsenide, selenium, silicon, calcium, calcium fluoride, fused silica materials, germanium, indium, indium phosphide, phosphorous and combinations thereof. The metal can also be a laminate alone or one disposed on a ceramic, a wood, a polymer, or combinations thereof. The metal can also be a ~~ceramet~~ cermet or a metal carbide.

Please replace paragraph [00041] with the following paragraph

[00041] The chamber used in the thermal process can be a double-walled insulated chamber, a vacuum chamber, and a vacuum-insulated chamber. Computer control (22) of the cryogenic process consists of a dedicated microprocessor unit (24) which controls injection of the cryogenic material via a solenoid-operated valve (26). Thermocouples (28a and 28b) provide real-time temperature measurement, and feedback to the microprocessor, which then follows the programmed temperature targets and rates.

Applicant believes that no new matter has been added with these amendments.